No.

200100229

HHE DAINED STANTES OF AMTERICA

Tourer Hi-Bred International, Inc.

MINTERS, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATIE OF REDISECTION FOR AN ALEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED HANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTINUED IN THE APPLICATION AND EXHIBIT, A COPY OF WHICH IS RERECATED AND MADE A PART HEREOF, AND THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS RERECATED AND MADE A PART HEREOF, AND THE AVAILANTS ARE THE THEORY OF FROM THE RECORDS OF THE PLANTY VARIETY PROFICETION OFFFICE, AN INTER APPLICATION INDICATED IN THE SAID COPY, AND WHERE AS, UPON DUE EXAMINATION MADE, THE SAID APPLICATION IS (ARE ADMINISTED AND ARE SETTINGED FOR AREA VARIETY PROFICED NOTHERS AND APPLICATION IS (ARE

ADJUCCIÓU TO SE ENTITLED TO A CERTIFICATE OF FLANT VALEET WIGTECTION INDER HIE LA W.

ONCY TIEREROPE, THE SCHITICACE OF PLANTY VALEET PROTECTION IS TO GARAT THATO THE SAID APPLICANTS,
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CORN, FIELD

'PH6WR'

In Cestinan Metros, I have herounts set my hand and caused the seal of the Hant Pariet. Heatertian Office to be affixed at the City of Washington, D.C. this tenth day of April, in the

ar two thousand three.

CARACITY OR TITLE

Research Scientist

7-25-01

DATE

CAPACITY OR TITLE

INSTRUCTIONS

GENERAL: To be effectively filed with the Plant Variety protection Office (PVPO), ALL of the following items-must or receivas in the PVPO: (1) Completed application form signed by the owner; (2) completed Exhibits a, B, c, E, (3) for a seed reproduced variety at least 2,500 viable unirelated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (in the sense that it will reproduce an entire plant) issue culture will be deposited and maintained in a approved public repository; (4) check drawn on a U.S. bank for \$2,450 (\$300 filling fee and \$2,150 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfiled. Mall application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 500, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 2075-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initiated and dated. DO NOT use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$320 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

> Plant Variety Protection Office Telephone: (301)504-5518 FAX: (301)504-5291

Homepage: http://www.ams.usda.gov/science/pvp.htm

ITEM

- 18a Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
  - (2) the details of subsequent stages of selection and multiplication:
  - (3) evidence of uniformity and stability; and
  - (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified.
- 18h Give a summary of the variety's distinctness, Clearly state how this application variety may be distinguished from all other
  - varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
    - identify these varieties and state all differences objectively;
    - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
- (3) submit, if helpful, seed and plant specimens of photographs (prints) of seed and plant companisons which clearly indicate distinctness.
- Exhibit C forms are available from the PVPO for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as 18c possible to describe your variety.
- 18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant disease resistance, etc.
- Section 52(5) of the Act required applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is 18e. available from the PVPO.
- 19 If "Yes" is specified (seed of this variety be sold by variety name only, as a class of certified seed), the applicant may NOT reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, applicant may change the choice, (See Regulations and Rules of Practice, Section 7.103).
- 22. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
- 22 See Section 5.5 of the Act for instructions on claiming the benefit of an earlier filing date.
- CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

United States, 11/01/2000

23 CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).

NOTES; It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of Regulations and Rules of Practice.)

To avoid conflict with other variety names in use, the applicant should check the variety names proposed by contacting: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center-East, Beltsville, MD 20705. Telephone: (301) 504-8089.

Public reporting burden in the collection of Internation is estimated to average 20 minutes per response, including the given for privately particular, asserting satisfies date in advantage of the collection of Information. Send commonate reporting this burden extense of any other september of the collection of Information. Send commonate reporting this burden extense of any other september of the collection of Information. Send commonate reporting this burden extense of any other september of the collection of Information. Send commonate of the Collection of Information in Send collection of Information in Send collection of Information in Send colleges and send collection of Information in Send colleges are discipling as with Collection Collection and Send Collection of Information in Send colleges are discipling as with Collection Collection in Send of Information in Send colleges are discipling as with Collection Collection Indiana. Send collection in Send Collection Indiana. Send collection in Send Collection Indiana. Send collection in Send Collection Indiana. Send collecti

(voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.

## Exhibit A. Origin and Breeding History

Pedigree: PH05H/PHPP8)X5511X

Pioneer Line PH6WR, Zea mays L., a dent corn inbred, was developed by Pioneer Hi-Bred International, Inc. from the single cross hybrid PH05H X PHPP8 (PVP Certificate No. 9500213) using the pedigree method of plant breeding. Varieties PH05H and PHPP8 are proprietary inbred lines of Pioneer Hi-Bred International, Inc. Selfing was practiced from the above hybrid for 6 generations using pedigree selection. During line development, crosses were made to inbred testers for the purpose of estimating the line's combining ability. Yield trials were grown at Macomb, Illinois as well as other Pioneer research locations. After initial testing, additional hybrid combinations have been evaluated and subsequent generations of the line have been grown and hand-pollinated with observations again made for uniformity. Variety PH05H was derived by pedigree selection from the single cross hybrid PHN10 X PHR03 (PVP Certificate No. 9100097). Variety PHN10 was derived by pedigree selection from a single cross hybrid G50 (PVP Certificate No. 3300143) X a variety derived from material tracing back primarily to Far South Open Pollinated, and SRS303, 1205, IDT, Troyer Reid, MINN49 and IDT.

Variety PH6WR has shown uniformity and stability for all traits as described in Exhibit C - "Objective Description of Variety". It has been self-pollinated and ear-rowed 4 generations with careful attention paid to selection criteria and uniformity of plant type to assure genetic homozygousity and phenotypic stability. The line has been increased both by hand and in isolated fields with continued observations for uniformity and stability, and for 3 generations during the final stages of inbred development and seed multiplication. Very high standards for genetic purity have been established morphologically using field observations and electrophoretically using sound lab molecular marker methodology.

No variant traits have been observed or are expected in PH6WR.

The criteria used in the selection of PH6WR were yield, both per se and in hybrid combinations; early growth, late season plant health, grain quality, stalk lodging resistance, and kernel size, especially important in production. Other selection criteria include: ability to germinate in adverse conditions; number of tillers, especially important in production because having numerous tillers increases hybrid production costs spent on detasseling; disease and insect resistance; pollen yield and tassel size.

Season/Year Pedigree Grown	Inbreeding Level of Pedigree Grown
1994 summer PH05H, PHPP8	F0
1994 WINTER PH05H/PHPP8	F1
1995 SUMMER	
PH05H/PHPP8)X	F2
1996 WINTER PH05H /PHPP8)X5	F3
1997 SUMMER PH05H /PHPP8X55	F4
1997 WINTER PH05H /PHPP8)X551	F5
1998 SUMMER PH05H /PHPP8)X5511	F6
Seed PH05H/PHPP8)X5511X	F7
	1.

<sup>\*</sup>PH6WR was selfed and ear-rowed from F3 through F6 generation.
#Uniformity and stability were established from F5 through F7 generation and beyond when seed supplies were increased.

### Exhibit B. Novelty Statement

Variety PH6WR mostly resembles Pioneer Hi-Bred International, Inc. proprietary inbred line PHPP8 (PVP Certificate No. 9500213). The data in Table 1A and 1B are from t-tests collected from two environments in Johnston, IA. and one environment in Ankeny, IA.

Variety PH6WR has a shorter husk length (19.9 cm vs 22.5 cm) than PHPP8 (Table 1A, 1B).

Variety PH6WR has a shorter leaf length (78.9 cm vs 88.7 cm) than PHPP8 (Table 1A, 1B).

Variety PH6WR has a shorter plant height (207.8 cm vs 238.3 cm) than PHPP8 (Table 1A, 1B).

Variety PH6WR has a shorter tassel central spike length (22.5 cm vs 26.3 cm) than PHPP8 (Table 1A, 1B).

Variety PH6WR has a shorter tassel length (52.2 cm vs 65.8 cm) than PHPP8 (Table 1A, 1B).

Variety PH6WR has a shorter tassel peduncle length (19.1 cm vs 26.6 cm) than PHPP8 (Table 1A, 1B).

xhibit B Novelty Statement Tables

able 1A. Data from the Johnston, IA. area (AD and JH) and Ankeny, IA. (IT) in 2000 are supporting evidence for differences between PH6WR nd PHPP8. A t-test was performed and broken out by environment.

Prob_(2- tail)_Pool ed	0.013	0.000	0.001	0.000	0.000	0.000	0.000	0.001	0.000	0.032		0.001		0.016	,	0.001	0000	0.001	0.013		0.001		0.000
t-Value_t Pooled	-3.16	-13.88	-4.75	-9.15	-6.68	-7.87	-7.64	-5.53	-6.02	-2.59		-5.29		-3.05		-5.27	-9.18	-5.53	-3.20		-5.11		-7.00
year station variety variety. Count- Oount- Mean-Mean-Di SidDev SidDev SidDev SidEror StatEror D-Pooled * 1:2. Prob_[2] Value [sin] Pool Pooled ed	8	80	80	8	æ	80	8	æ	80	8		8		8		80	80	۵	æ		8		8
StdError -2	0.316	0.245	0.374	0.374	1.114	1.319	3.774	3.184	2.581	0.632		0.812		0.812		1.749	0.927	1.691	1.960		1.470		0.707
stdError -1	0.548	0.000	0.400	0.980	0.583	0.600	1.691	3.655	4.833	0.678		0.735		0.663		2.200	1.265	1.241	0.970		0.735		0.707
StdDev S	0.707	0.548	0.837	0.837	2.490	2.950	8.438	7.120	5.771	1.414		1.817		1.817		3.912	2.074	3.782	4.382		3.286		1.581
StdDev	1.225	0.000	0.894	2.191	1.304	1.342	3.782	8.173	-33.0 10.807	1.517		1.643		1.483		4.919	2.828	2.775	2.168		1.643		1.581
fean_Di	-2.0	-3.4	-2.6	9.6-	-8.4	-11.4	-31.6	-26.8	-33.0	-2.4		-5.8		-3.2		-14.8	-14.4	-11.6	-7.0		-8.4		-7.0
Mean- n 2	22.0	23.4	22.2	90.2	87.2	88.8	211.6 243.2	214.4 241.2	197.4 230.4	25.0		27.6		26.4		9.59	70.4	61.4	27.2		30.6		22.0
Mean-	20.0	20.0	19.6	90.6	78.8	77.4	211.6	214.4	197.4	22.6		21.8		23.2		20.8	56.0	49.8	20.2		22.2		15.0
Count-	2	2	2	2	2	2	2	2	2	2		2		2		2	2	2	သ		'n		2
Count -	2	2	2	2	2	2	2	2	2	2		2		2		2	2	2	2		S		2
variety-	PHPP8	ВНРРВ	ВНРРВ	вини	РНРРВ	ВНРРВ	задна)	вадна	PHPP8	8ddHd		BHHPB		PHPP8		вадна	PHPP8	3ddHd	PHPP		PHPP		PHPP8
variety-	PH6WR PHPP8	PH6WR PHPP8	PH6WR PHPP8	PH6WR PHPP8	PH6WR PHPP8	PH6WR PHPP8	PH6WR PHPP8	PH6WR PHPP8	PH6WR PHPP8	PH6WR PHPP8		PH6WR PHPP8		PH6WR PHPP8		PH6WR PHPP8	PH6WR PHPP8	PH6WR PHPP8	PH6WR PHPP8		PH6WR PHPP8		PH6WR PHPP8
station	ΑĐ	Н	丐	ΑD	⊥	H	AD	П	독	AD		E		등		AD	Ė	H (	AD		느		픙
year	2000 AD	2000	2000 JH	2000 AD	2000  T	2000 JH	2000 AD	2000 11	2000 JH	2000 AD		2000		2000 JH		2000	2000	2000	2000 AD		2000		2000 JH
Trait	usk length (cm)	usk length (cm)	usk length (cm)	at length (cm)	aef length (cm)	af length (cm)	lant height (cm)	lant height (cm)	ant height (cm)	assel central	pike length (cm)	assel central	pike length (cm)	assel central	pike length (cm)	assel length (cm) 2000 AD	assel length (cm) 2000 IT	assel length (cm) 2000 JH	assel peduncle	angth (cm)	assel peduncle	angth (cm)	assel peduncle

**Exhibit B Novelty Statement Tables** 

'able 1B. Summary data across environments in 2000 are supporting evidence for differences between PH6WR and PHPP8. A t-test was rerformed across environments in 2000.

Prob_(2- tail)_Pool ed	0.000	0.000		l			0.000	_
t-value Pooled	-8.34	-11.84	-8.47	-5.97		-7.99	-4.86	
DF_Pooled	28	28	28	28		28	28	
StdError- 2	0.236	0.636	2.283	0.494		1.269	1.230	
StdError-1	0.215	0.530	2.780	-		1.135	0.920	
SkidDev-2 SkidError- SkidError- DF_Pooled t-value 1 1 2 Pooled to	0.915	2.463	8.844	1.915			4.763	
StdDev-1	0.834	2.052	10.765	1.552		4.395	3.563	
Mean- Mean Mean 1 2 Diff	-2.7	-9.8	-30.5	-3.8		-13.6	-7.5	
Mean- 2	22.5	88.7	238.3	26.3		8.59	26.6	
Mean-	19.9	78.9	207.8	22.5		52.2	19.1	
Count- Count- 1	15	15	15	15		15	15	
Count- 1	15	15	15	15		15	15	
variety- 2	PHPP8	PHPP8	PHPP8	PHPP8		PHPP8	РНРР8	
variety- 1	2000 PH6WR		2000 PH6WR	2000 PH6WR		2000 PH6WR	2000 PH6WR PHPP8	
year	2000	2000	2000	2000			2000	
Trait	usk length (cm)	saf length (cm)	lant height (cm)	assel central	pike length (cm)	length (cm)	assel pedunde	angth (cm)

### DEFINITIONS

In the description and examples, a number of terms are used herein. In order to provide a clear and consistent understanding of the specification and claims, including the scope to be given such terms, the following definitions are provided:

ANT ROT = ANTHRACNOSE STALK ROT (Colletotrichum graminicola).

A 1 to 9 visual rating indicating the resistance to Anthracnose Stalk Rot. A higher score indicates a higher resistance.

BAR PLT = BARREN PLANTS.

The percent of plants per plot that were not barren (lack ears).

BRT STK = BRITTLE STALKS.

This is a measure of the stalk breakage near the time of pollination, and is an indication of whether a hybrid or inbred would snap or break near the time of flowering under severe winds. Data are presented as percentage of plants that did not snap.

BU ACR = YIELD (BUSHELS/ACRE).

Yield of the grain at harvest in bushels per acre adjusted to 15.5%

CLD TST = COLD TEST.

The percent of plants that germinate under cold test conditions.

CLN = CORN LETHAL NECROSIS.

Synergistic interaction of maize chlorotic mottle virus (MCMV) in combination with either maize dwarf mosaic virus (MDMV-A or MDMV-B) or wheat streak mosaic virus (WSMV). A 1 to 9 visual rating indicating the resistance to Corn Lethal Necrosis. A higher score indicates a higher resistance.

COM RST = COMMON RUST (Puccinia sorghi).

A 1 to 9 visual rating indicating the resistance to Common Rust. A higher score indicates a higher resistance.

DIP ERS = DIPLODIA EAR MOLD SCORES (Diplodia maydis and Diplodia

macrospora).

A 1 to 9 visual rating indicating the resistance to Diplodia Ear Mold. A higher

score indicates a higher resistance.

DRP EAR = DROPPED EARS.

A measure of the number of dropped ears per plot and represents the percentage of plants that did not drop ears prior to harvest.

EAR HT = EAR HEIGHT.

The ear height is a measure from the ground to the highest placed developed ear node attachment and is measured in cm.

EAR MLD = GENERAL EAR MOLD.

Visual rating (1-9 score) where a "1" is very susceptible and a "9" is very resistant. This is based on overall rating for ear mold of mature ears without determining the specific mold organism, and may not be predictive for a specific ear mold.

EAR SZ = EAR SIZE.

ECB ILF = A 1 to 9 visual rating of ear size. The higher the rating the larger the ear size.

ECB ILF = EUROPEAN CORN BORER FIRST GENERATION LEAF FEEDING (Ostrinia nubitalis).

A 1 to 9 visual rating indicating the resistance to preflowering leaf feeding by first generation European Corn Borer. A higher score indicates a higher resistance.

ECB 2IT = EUROPEAN CORN BORER SECOND GENERATION INCHES OF TUNNELING (Ostrinia nubilalis).

Average inches of tunneling per plant in the stalk.

ECB 2SC = EUROPEAN CORN BORER SECOND GENERATION (Ostrinia nubilalis).

A 1 to 9 visual rating indicating post flowering degree of stalk breakage and

other evidence of feeding by European Corn Borer, Second Generation. A higher score indicates a higher resistance.

EUROPEAN CORN BORER DROPPED EARS (Ostrinia nubilalis). ECB DPE Dropped ears due to European Corn Borer. Percentage of plants that did not

drop ears under second generation corn borer infestation. EGRWTH EARLY GROWTH.

indicates better vigor or early season growth.

This is the visual rating (1 to 9) of the amount of vegetative growth after emergence at the seedling stage (approximately five leaves). A higher score

EST CNT EARLY STAND COUNT.

This is a measure of the stand establishment in the spring and represents the number of plants that emerge on per plot basis for the inbred or hybrid. EYE SPOT (Kabatiella zeae or Aureobasidium zeae).

EYE SPT A 1 to 9 visual rating indicating the resistance to Eve Spot. A higher score indicates a higher resistance.

FUSARIUM EAR ROT SCORE. (Fusarium moniliforme or Fusarium FUS ERS subglutinans). A 1 to 9 visual rating indicating the resistance to Fusarium ear rot. A higher

score indicates a higher resistance. GDU GROWING DEGREE UNITS.

GDU SHD

Using the Barger Heat Unit Theory, which assumes that maize growth occurs in the temperature range 50°F - 86°F and that temperatures outside this range slow down growth; the maximum daily heat unit accumulation is 36 and the minimum daily heat unit accumulation is 0. The seasonal accumulation of GDU is a major factor in determining maturity zones.

GDU TO SHED. The number of growing degree units (GDUs) or heat units required for an inbred line or hybrid to have approximately 50 percent of the plants shedding pollen and is measured from the time of planting. Growing degree units are calculated by the Barger Method, where the heat units for a 24-hour period are:

GDU = (Max. Temp. + Min. temp.) - 50/2

The highest maximum temperature used is 86° F, and the lowest minimum temperature used is 50°F. For each inbred or hybrid it takes a certain number of GDUs to reach various stages of plant development.

GDU SLK GDU TO SILK. The number of growing degree units required for an inbred line or hybrid to have approximately 50 percent of the plants with silk emergence from time of planting. Growing degree units are calculated by the Barger Method as given in

GDU SHD definition. GIBERS GIBBERELLA EAR ROT (PINK MOLD) (Gibberella zeae).

A 1 to 9 visual rating indicating the resistance to Gibberella Ear Rot. A higher score indicates a higher resistance.

GLF SPT GRAY LEAF SPOT (Cercospora zeae-maydis). A 1 to 9 visual rating indicating the resistance to Gray Leaf Spot. A higher score indicates a higher resistance.

GOS WLT = GOSS' WILT (Corvnebacterium nebraskense). A 1 to 9 visual rating indicating the resistance to Goss' Wilt. A higher score indicates a higher resistance.

GRN APP = GRAIN APPEARANCE.

This is a 1 to 9 rating for the general appearance of the shelled grain as it is harvested based on such factors as the color of harvested grain, any mold on the grain, and any cracked grain. High scores indicate good grain quality.

HC BLT = HELMINTHOSPORIUM CARBONUM LEAF BLIGHT (Helminthosporium carbonum).

A 1 to 9 visual rating indicating the resistance to Helminthosporium infection. A higher score indicates a higher resistance.

HD SMT = HEAD SMUT (Sphacelotheca reiliana).

This score indicates the percentage of plants not infected.

KER KG = KERNELS PER KILOGRAM.

The number of kernels per 1 kilogram of seed after discard is removed.

KSZ DCD = KERNEL SIZE DISCARD.

The percent of discard seed; calculated as the sum of discarded tip kernels and

extra large kernels.

MDM CPX = MAIZE DWARF MOSAIC COMPLEX (MDMV = Maize Dwarf Mosaic Virus and MCDV = Maize Chlorotic Dwarf Virus).

A 1 to 9 visual rating indicating the resistance to Maize Dwarf Mosaic Complex.

A higher score indicates a higher resistance.

MST = HARVEST MOISTURE.

The moisture is the actual percentage moisture of the grain at harvest.

NLF BLT = NORTHERN LEAF BLIGHT (Helminthosporium turcicum or Exserohilum turcicum).

A 1 to 9 visual rating indicating the resistance to Northern Leaf Blight. A higher score indicates a higher resistance.

PLT HT = PLANT HEIGHT.

This is a measure of the height of the plant from the ground to the tip of the tassel in cm.

POL SC = POLLEN SCORE.

A 1 to 9 visual rating indicating the amount of pollen shed. The higher the score the more pollen shed.

POL WT = POLLEN WEIGHT.

This is calculated by dry weight of tassels collected as shedding commences minus dry weight from similar tassels harvested after shedding is complete.

PRM = PREDICTED RELATIVE MATURITY.

This trait, predicted relative maturity, is based on the harvest moisture of the grain. The relative maturity rating is based on a known set of checks and utilizes standard linear regression analyses and is also referred to as the Comparative Relative Maturity Rating System that is similar to the Minnesota Relative Maturity Rating System.

PRM SHD = PREDICTED RELATIVE MATURITY GDU TO SHED.

A relative measure of the growing degree units (GDU) required to reach 50% pollen shed. Relative values are predicted values from the linear regression of observed GDU's on relative maturity of commercial checks.

RT LDG = ROOT LODGING.

Root lodging is the percentage of plants that do not root lodge; plants that lean from the vertical axis at an approximately 30° angle or greater would be counted as root lodged.

SCT GRN = SCATTER GRAIN.

A 1 to 9 visual rating indicating the amount of scatter grain (lack of pollination or kernel abortion) on the ear. The higher the score the less scatter grain.

SEL IND = SELECTION INDEX.

The selection index gives a single measure of the hybrid's worth based on information for up to five traits. A maize breeder may utilize his or her own set of traits for the selection index. One of the traits that is almost always included is yield. When selection index data is presented, the tables represent the mean value averaged across testing stations.

SLF BLT = SOUTHERN LEAF BLIGHT (Helminthosporium maydis or Bipolaris maydis).

A 1 to 9 visual rating indicating the resistance to Southern Leaf Blight. A higher score indicates a higher resistance.

SOU RST = SOUTHERN RUST (Puccinia polysora).

A 1 to 9 visual rating indicating the resistance to Southern Rust. A higher score indicates a higher resistance.

STAGRN = STAYGREEN.

Staygreen is the measure of plant health near the time of black layer formation (physiological maturity). A high score indicates better late-season plant health.

STK CNT = NUMBER OF PLANTS.

This is the final stand or number of plants per plot.

STK LDG. = STALK LODGING.

This is the percentage of plants that did not stalk lodge (stalk breakage) as measured by either natural lodging or pushing the stalks and determining the percentage of plants that break below the ear.

STW WLT = STEWART'S WILT (Erwinia stewartii).

A 1 to 9 visual rating indicating the resistance to Stewart's Wilt. A higher score indicates a higher resistance.

TASBRN = TASSEL BRANCHES.

This is the number of primary tassel branches.

TAS SZ = TASSEL SIZE.

A 1 to 9 visual rating was used to indicate the relative size of the tassel. The higher the rating the larger the tassel.

TAS WT = TASSEL WEIGHT.

This is the average weight of a tassel (grams) just prior to pollen shed.

TEX EAR = EAR TEXTURE.

A 1 to 9 visual rating was used to indicate the relative hardness (smoothness of crown) of mature grain. A 1 would be very soft (extreme dent) while a 9 would be very hard (flinty or very smooth crown).

TILLER = TILLERS.

A count of the number of tillers per plot that could possibly shed pollen was taken. Data are given as a percentage of tillers: number of tillers per plot divided by number of plants per plot.

TST WT = TEST WEIGHT (UNADJUSTED).

The measure of the weight of the grain in pounds for a given volume (bushel).

YLD SC = YIELD SCORE.

A 1 to 9 visual rating was used to give a relative rating for yield based on plot ear piles. The higher the rating the greater visual yield appearance.

# United States Department of Agriculture, Agricultural Marketing Service Science Division, Plant Variety Protection Office National Agricultural Library Bullding, Room 500 Belisville, MD 20705

Objective Description of Variety Corn (Zea mays L.)

Name of Applicant Pioneer Hi-Br	ed International, Inc.	Variety Seed Source	Variety	y Name or Temporary Designation PH6WR		
Address (Street & )	No., or RFD No., City, State, Zip Code	and Country	FOR OFFICIAL USE			
7301 NW 62nd	Avenue, P.O. Box 85,		200100229			
Johnston, Iow	a 50131-0085	PVP0 Number	200100227			
Leading zeroes if a Necessary for an a	te number that describes the varietal checessary. Completeness should be stridequate variety description and must be (Use in conjunction with Munsell colors)	ven for to establish an adequate va e completed.	riety description. Traits	• ,		
01=Light Green	06=Pale Yellow	11=Pink	16=Pale Purple	21=Buff		
02=Medium Green	07≃Yellow	12=Light Red	17=Purple	22=Tan		
03=Dark Green	08=Yellow Orange	13=Cherry Red	18=Colorless	23=Brown		
04=Very Dark Gree		14=Red	19=White	24=Bronze		
05=Green-Yellow	10=Pink-Orange	15=Red & White	20=White Capped	25=Variegated (Describe)		
	•			26=Other (Describe)		
STANDARD INBR	ED CHOICES					
	ar (in background and maturity) of the	se to make comparisons based on g	row-out trial data):			
Yellow Dent Famili	ies:	Yellow Dent (Unrelated):	Sweet Co	orn:		
Family Member		Co109, ND246,	C13, Iov	wa5125, P39, 2132		
B14 CM10	5, A632, B64, B68	Oh7, T232,				
	376, H84	W117, W153R,	Popcom:			
	A679, B73, NC268	W18BN	SG1533	, 4722, HP301, HP7211		
	Va102, Va35, A682					
	MS71, H99, Va26	White Dent:	Pipecorn:			
	, A554, A654, Pa91	C166, H105, Ky228	Mo15W	, Mo16W, Mo24W		
Groups on Lynx/Osborn/G	nust/98-99PVP					

			Page 1			_	rd Variety	
1	Bar Glumes (C	Blume Bands): 1≔Abser	nt 2=Present			1		1
01	Glume Color (	Munsell code)	5GY66			01	5G	<u>75</u> 8
	Anther Color (		10RP3/8			07		/8B
			ale sterile to 9=heavy she			7		
		gth (from top leaf collar	to tassel tin)	03.33	03	61.5		03
		rom Central Spike		03.60	03	35	10.38	03
10	Number of Orig	nary Lateral Branches		01.21	03	21	01.81	03
B. TASSE	L:			Deviation	Size		Deviation	Size
		· · · · · · · · · · · · · · · · · · ·	, ,	Standard	Sample		Standard	Sample
	-	•	from (=none to 9=many)					
-		s (Rate on scale from				-		
			ale from 1=none to 9=like	e peach fuzz)		1	***	
U3	at anthesis to Leaf Color (Mu	stalk above leaf)	5GY3Å			03	5G)	(3h
14		Angle (measure from 2	nd leaf above ear	03.62	03	16	03.86	03
		ves above top ear		00.31	03	06	00.53	03
	cm Length of I			01.60	03	83.5	02.72	03
10.4	cm Width of E	ar Node Leaf		00,20	03	10.3	00.64	03
o				Deviation	Size	[	Deviation	Size
5. LEAF:				Standard	Sample		Standard	Sampl
5	Anthocyanin	of Brace Roots: 1=Abs	ent 2=Faint 3=Moderate	4=Dark 5=Ve	ry Dark	1		
0.9	Average Num	ber of Ears per Stalk		00.13	03	0.8	00.10	03
0.0	Average Num	ber of Tillers		00.01	03	0.0	00.00	03
		Top Ear Internode		00.46	03	014.7	01.10	03
		t (to base of top ear no	de)	08.02	03	077.7	07.57	03
207.7	cm Plant Heig	ght (to tassel tip)		09.29	03	236.3	10.02	03
4. PLANT	3			Standard Devlation	Sample Size		Standard Deviation	Samp
		III OU /o OIIN TO HAIVEST	at 20% moisture					_
		m 50% silk to optimum m 50% silk to harvest :						
003		m 10% to 90% pollen : m 50% silk to optimum				005	V.110./	
		m emergence to 50% o				005	0.118.7	
_		m emergence to 50%	•			074 076	1,381.0 1,435.7	
DAYS	HEAT UNITS				,	1	HEAT UN	ITS
3 MATU	RITY (In Region	of Rest Adantability:	how Heat Unit formula in	'Comments' se	ection)	ļ		
		=Northcentral 3=Northe =Other <u>C</u> entral Com I	east 4=Southeast 5=Southeast 5	uthcentral			AMES 19	329
	N WHERE DE		Stand	ard Seed	Source			
2	<u>VA26</u>							
1. TYPE:	Standard Variety Name							

Application	Variety Data	PH6WR	Page 2			Standa	ard Varie	ty Data
7a. EAR (	Unhusked Data):							
11	Silk Color (3 days after er	nergence) (Mun	sell code)		5R58	01	2.5G	Y86
03	Fresh Husk Color (25 day	s after 50% silkir	ng) (Munsell code)		5GY56	02	5GY	56
<u>21</u>	Dry Husk Color (65 days	after 50% silking	) (Munsell code)		5Y92	21 2.5Y8.52		
<u>3</u>	Position of Ear at Dry Hus	sk Stage: 1= Upri	ght 2= Horizontal	3≃ Pendant	<del></del>	3		
<u>5</u>	Husk Tightness (Rate of	Scale from 1=ver	y loose to 9=very ti	ight)		6		
2	Husk Extension (at harve	st): 1=Short (ears	exposed) 2=Medi	um (<8 cm)		3		
	3=Long (8-10 cm beyond	ear tip) 4=Very L	.ong (>10 cm)			-		
7b. EAR	(Husked Ear Data):			Standard	Sample	Sta	ndard	Samp
				Deviation	Size	Dev	viation	Size
<u>16.7</u>	cm Ear Length			00.58	03	12.7	00.58	03
41.3	mm Ear Diameter at mid-	point		01.15	03	40.0	01.73	03
115.7	gm Ear Weight			23.80	03	82.0	14.11	03
<u>17</u>	Number of Kernel Rows			00.58	03	16.0	00.00	03
2	Kernel Rows: 1=Indistinct	2=Distinct				2		
2	Row Alignment: 1=Straigh	nt 2=Slightly Curv	ed 3=Spiral			1		
06.7	cm Shank Length			00.58	03	07.3	00.58	03
2	Ear Taper: 1=Slight 2= Av	erage 3=Extreme	9			2		
8. KERNE	L (Drled)			Standard	Sample	Standa	ard	Samp
				Deviation	Size	Deviat	tion	Size
10.7	nm Kernel Length			00.58	03	09.7	0.58	03
07.7	mm Kernel Width			00.58	03	07.7 0	0.58	03
<u>05.0</u> r	nm Kemel Thickness			00.00	03	04.0 0	0.00	03
22.3	% Round Kernels (Shape 0	Grade)		09.50	03	63.0 1	4.73	03
1 /	Aleurone Color Pattem: 1-	Homozygous 2=	Segregating			1		
07	Aluerone Color (Munsell o	ode)		10	YR7/14	07	2.5Y	814
<u>07</u> I	Hard Endosperm Color (M	unsell code)		1.2	25Y7/14	07	2.5Y	<u>8/14</u>
<u>03</u> E	Endosperm Type:				,	3		'
	1=Sweet (Su1) 2=Extra 4=High Amylose Starch 7=High Lysine 8=Super 10=Other	5=Waxy Starch	6≃High Protein					
25.3 g	m Weight per 100 Kernels	(unsized sample	)	04.51	03	21.33 0	2.08	<u>03</u>
O. COB:				Standard	Sample	St	andard	Sampl
				Deviation	Size	De	viation	Size
22.7 n	nm Cob Diameter at mid-p	olnt		00.58	03	24.0	01.73	03

PH6WR	Application Variety Data	Page 3	Standard Varie	ty Data	
	RESISTANCE (Rate from 1 (mos				
A. Leaf	Blights, Wilts, and Local Infection	Diseases			
	Anthracnose Leaf Blight (Coll	etatrichum aren	ninicola)		
<u>6</u>		hi) /dis)	·	<u>5</u>	
<u>5</u>		,	iooraononoo)	<u>3</u>	
-	Helminthosporium Leaf Spot		a) Race ——	_	
Z	Northern Leaf Blight (Exseroh	llum turcicum)	Race ——	2	
<u>6</u>			Race ——	<u>5</u>	
	Southern Rust (Puccinia polys			l _	
<u>5</u>	Stewart's Wilt (Erwinia stewar	tii)		<u>5</u>	
	Other (Specify)				
B. Syste	emic Diseases				
	Com Lethal Necrosis (MCMV	and MDMV)			
8	Head Smut (Sphacelotheca re	elliana)		8	
	Maize Chlorotic Dwarf Virus (I	MDV)			
	Maize Chlorotic Mottle Virus (	MCMV)		1	
<u>3</u>	Malze Dwarf Mosaic Virus (MI	DMV)		4	
	Sorghum Downy Mildew of C	om (Peronoscle	erospora sorghi)		
	Other (Specify) ———				
C. Stalk	Rots				
5	Anthracnose Stalk Rot (Collete	otrichum gramir	nicola)	3	
	Diplodia Stalk Rot (Stenocarpe	ella maydis)		_	
	Fusarium Stalk Rot (Fusarium	monitiforme)		İ	
	Gibberella Stalk Rot (Gibberel	la zeae)			
	Other (Specify)				
D. Ear a	nd Kemel Rots				
	Aspergillus Ear and Kernel Ro	t (Aspergillus fla	avus)		
<u>5</u>	Diplodia Ear Rot (Stenocarpell	a maydis)		<u>5</u>	
6	Fusarium Ear and Kernel Rot	(Fusarium moni	liforme)	6	
	Gibberella Ear Rot (Gibberella	zeae)			
	Other (Specify) ——				

Application Variety Data

Page 3

Standard Variety Data

PH6WR Application Variety Data Page 4 Standard Variety Data 11. INSECT RESISTANCE (Rate from 1 (most susceptible) to 9 (most resistant); (leave blank if not tested): Banks grass Mite (Oligonychus pratensis) Corn Worm (Helicoverpa zea) Leaf Feeding Silk Feeding mg larval wt. Ear Damage Com Leaf Aphid (Rhopalosiphum maidis) Com Sap Beetle (Carpophilus dimidiatus European Com Borer (Ostrinia nubilalis) 1st Generation (Typically Whorl Leaf Feeding) 2nd Generation (Typically Leaf Sheath-Collar Feeding) Stalk Tunneling cm tunneled/plant Fall Armyworm (Spodoptera fruqiperda) Leaf Feeding Silk Feeding ma larval wt. Maize Weevil (Sitophilus zeamaize Northem Rootworm (Diabrotica barberi) Southern Rootworm (Diabrotica undecimpunctata) Southwestern Corn Borer (Diatreaea grandiosella) Leaf Feeding Stalk Tunneling cm tunneled/plant Two-spotted Spider Mite (Tetranychus urticae) Western Rootworm (Diabrotica virgifrea virgifera) Other (Specify) ----12. AGRONOMIC TRAITS: Staygreen (at 65 days after anthesis) (Rate on a scale from 1=worst to excellent) % Dropped Ears (at 65 days after anthesis) % Pre-anthesis Brittle Snapping % Pre-anthesis Root Lodging Post-anthesis Root Lodging (at 65 days after anthesis) 12.9 5.122.6 Kg/ha Yield of Inbred Per Se (at 12-13% grain moisture) 3,000.4

13. MOLECULAR MARKERS: (0=data unavailable; 1=data available but not supplied; 2=data supplied):

1 isozymes

0 RFLP's

0 RAPD's

COMMENTS (eg. state how heat units were calculated, standard inbred seed source, and/or where data was collected. Continue in Exhibit D):

Application Variety Data

Page 4

Standard Variety Data

Please note the data presented in Exhibit C, "Objective Description of Variety," are collected primarily at Johnston and Ankeny, Iowa. The data in Exhibit B are from comparisons of inbreds grown in the same tests in the adapted growing area of PH6WR and in Johnston and Ankeny, IA. The data in Tables 1A and 1B are from paired comparison t-tests collected in Johnston and Ankeny, IA. These traits collectively show distinct differences between the two varieties.

The data collected in exhibit C was collected in 2000 for page 1 and 2. There were 3 different planting dates planted for these trials. There are environmental factors that differ from planting date to planting date. Environmental temperature and precipitation differences during the vegetative and grain fill periods can impact plant and grain traits, and are a source of variability. The environmental conditions described above could result in larger standard deviations. The variation associated with environment to environment is normally higher than the variation associated within locations.

#### U.S. DEPARTMENT OF AGRICULTURE The following statements are made in accordance with the Privacy Act of 1974 (5 U. S. C. 552a) and the Paperwork Reduction Act (PRA) of 1995. ACRICIII TURAL MARKETING SERVICE **EXHIBIT E** Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential STATEMENT OF THE BASIS OF OWNERSHIP until certificate is issued (7 U.S.C. 2426). NAME OF APPLICANT(S) TEMPORARY DESIGNATION VARIETY NAME OR EXPERIMENTAL NUMBER PIONEER HI-BRED INTERNATIONAL, INC. PH6WR 5. TELEPHONE (Include area code) FAX (include area code) 4 ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) 7301 NW 62<sup>nd</sup> AVENUE 515-270-4051 515-253-2125 **P.O.BOX 85** 7. PVPO NUMBER JOHNSTON, IA 50131-0085 200100229 II NO. 8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain: ⊠ YES ⊠ YES □ NO 9. Is the applicant (individual or company) a U.S. national or U.S. based company? If no, give name of country X YES ☐ NO If no, please answer one of the following: 10. Is the applicant the original owner? a. If original rights to variety were owned by individual(s), is(are) the original owner(s) a U.S. national(s)? ☐ YES NO if no, give name of country b. If original rights to variety were owned by a company(ies), is(are) the original owner(s) a U.S. based company? ☑ YES NO If no, give name of country

11. Additional explanation on ownership (if needed, use reverse for extra space):

PH6WR is owned by Pioneer Hi-Bred International, Inc.

### PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

- If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country
  Which affords similar protection to nationals of the U.S. for the same genus and species.
- 2 If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV memb country, or owned by national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
- 3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See section 41(a)(2) of the Plant Variety Protection Act for definition.

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